

the eggshell, an effect which had been subsequently found to be almost worldwide. Further studies correlated this with the pesticide residue in the environment and experiments with captive populations in Canada and the States revealed that the absorption of D.D.E. caused a deficiency of calcium metabolism in this species.

## The Scarlet Ibis *Eudocimus ruber* in southeastern Brazil

by L. O. Marcondes-Machado and E. L. A. Monteiro Filho

Received 25 October 1989

The original distribution of the Scarlet Ibis *Eudocimus ruber* ranged from northern South America (Ecuador, Colombia, Venezuela, the Guianas, Surinam and occasionally Trinidad), in the mangroves along the Brazilian coast south to the State of Santa Catarina (c. 28°S) (Sick 1984). Currently, however, the Scarlet Ibis is considered to be restricted to only the northern South American Atlantic coast (Pinto 1978, Sick 1984), apart from 3 specimens recorded from Paranaguá Bay (c. 25°29'S) (Paraná State) by P. Scherer in 1977 (Teixeira & Best 1981) and occasional occurrences recorded by local people in 1986 in the estuarine system of Santos Bay (São Paulo State) (Bokermann & Guix 1986).

Scarlet Ibis usually inhabit mangroves on coastlines (French & Haverschmidt 1970, Spaans 1982, Sick 1984), but Zahl (1950) studied one population on a river bank in Venezuela, where they may feed and nest in association with other bird species away from mangroves.

The aim of this paper is to provide more details on the rediscovery of the Scarlet Ibis in southeastern Brazil and to emphasize the possible danger to which this population is exposed by local industry's huge pollution discharge, first reported by Marcondes-Machado & Monteiro Filho (1989) in order to alert the authorities involved.

### Study area

Scarlet Ibis were observed in the inland area of the Santos Bay estuarine system (Fig. 1) at the confluence of the Onças and Quilombo rivers (23°53'S, 46°21'W). The site is bounded to the north and northwest by factories of the industrial complex of Cubatão (COSIPA, Ultrafétil), to the northeast and east by the Vale do Quilombo and Serra do Mar, to the south by a small chain of hills up to 300 m elevation, and to the west by the waterway (Santos Channel).

The climate here is humid tropical (Santos 1965), characterized as warm and rainy without a true dry season. Mangroves, dominated by *Rhizophora mangle*, cover the area and at low tides some banked beaches are exposed.

During a survey of its vertebrate land fauna (with the intention of possibly reintroducing some species), the area has been visited on 2 days each month since May 1988. Observations of Scarlet Ibis were made from

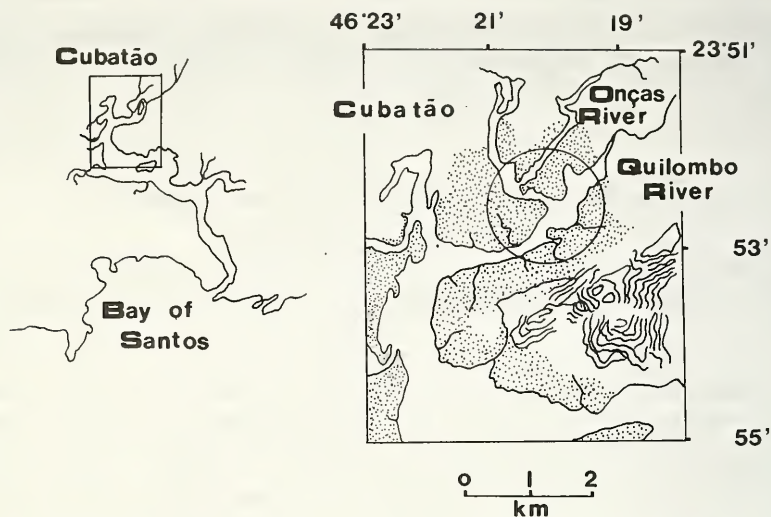


Figure 1. The estuarine system of Santos, SP, Brazil. The circle indicates the area in which feeding, roosting and nest building of the Scarlet Ibis *Eudocimus ruber* took place. The dotted area represents the mangroves.

the shore or from a small boat. We recorded the number of birds, their spacial distribution, and the presence of nests and their characteristics, but avoided close inspection of the nests to minimize disturbance. We also obtained some information from the boatman, who has lived in the region for many years.

### Observations

On 23 and 24 January 1989, between 15.30 and 17.00, from the work-site at COSIPA we observed unidentified red birds, presumably Scarlet Ibis, flying between the Santos Channel and Santos Town. The group, initially estimated at 100 individuals, flying mainly in a long line (we did not see any V formations reported by French & Haverschmidt 1970) descended towards the Quilombo river area. Then on 7 March we clearly identified 20 Scarlet Ibis flying towards the Onças river. Later the same day, at low tide, when some mud banks with crabs (*Sesarma* sp. and *Uca* sp.) were exposed, there were 27 Scarlet Ibis feeding among *R. mangle* roots and c. 60 others feeding on the mud, near the water. Snowy Egrets *Egretta thula*, Little Blue Heron *Florida caerulea* and Roseate Spoonbills *Ajaia ajaja* were also seen on the mud banks. As we approached closer, the Scarlet Ibis flew off in groups of 30–40 to other mud banks of the Onças river. At high tide, these birds rested on the mangroves, together with Yellow-Crowned Night-Herons *Nyctanassa violacea*, always along the river margin, the great majority on the middle layer of the trees, only a few elsewhere. Whenever disturbed, the Scarlet Ibis flew away some distance, but never outside the circumscribed area shown in Fig. 1.

On the margin of the Quilombo river, we saw the beginning of a probable Scarlet Ibis nesting colony; there were 2 pairs, with one nest under construction and the other with a sitting female, probably incubating. Both nests were typical (French & Haverschmidt 1970), 4 m above high tide mark and built of wet mangrove twigs in forks in the branches. Even at low tide, the trees were still in water. The nest is round, c. 30 cm in external diameter and c. 15 cm deep externally. We did not examine the interior of the nests in order to avoid disturbance. The nests were well sited against both land and water predators, amongst which we had seen the otter *Lutra longicaudis*.

On the northern South America coastal mangroves, breeding occurs after the rainy season (French & Haverschmidt 1970, Sick 1984), while on the inland rivers of Venezuela, Scarlet Ibis breed in the rainy season (Zahl 1950). However, in the estuarine system of Santos any relationship between breeding season and rainfall needs longterm observation, because there is no true dry season.

Since Scarlet Ibis have been seen by our boatman, Pedro Godoy Filho, in this region for c. 18 months and are now found to be constructing nests, their presence is likely to be permanent, not opportunistic as suggested by Bokermann & Guix (1986).

### Conservation

The reappearance of the Scarlet Ibis in the region of Santos as a breeding bird is important because it may indicate the start of a new colonization of southeastern Brazil by this species, and also by other birds such as the Roseate Spoonbill. However, the successful establishment of new breeding colonies of birds and other animals in this area is at risk from the human population inhabiting adjacent mangroves, and particularly by the destruction of the mangroves for industry and human settlements. Predation of eggs is another factor, but perhaps the greatest threat is from pollution. Tommasi (1985a, b) has reported high levels of mercury and pesticide residues in the water and in the sediments of the Santos Channel, close to the Quilombo river's mouth. These poisons may then enter the food chain of the Scarlet Ibis via crabs, and endanger, at least, the birds chances of reproduction.

Thus, we believe that, in spite of the apparent healthy appearance of this mangrove environment at present, it is essential to monitor the pollution level of the area regularly. Although Vale do Quilombo is a State Reservation, it really needs national recognition.

### Acknowledgements

We acknowledge with our best thanks: Agripino Ferraz ("Pipa"), for logistic and field work support; our boatman Pedro Godoy Filho for information, for his skill and for his conscientious support for conservation; Karin D. Kempers, Sérgio F. dos Reis, Jacques Viellard, Augusto S. Abe and Jussara F. C. Melo for reading the manuscript and making suggestions; Doroth P. Uchôa and Gisela Y. Schimizu, for inviting us to participate in the project "Archaeological, Ecological and historical preservation of the Casqueirinho Island, COSIPA, Cubatão, SP, Brazil" (agreement COSIPA/IPH-USP).

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## Rediscovery of the Madagascar Serpent-eagle *Eutriorchis astur*

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Received 28 December 1989

The Madagascar Serpent-eagle *Eutriorchis astur* is known only from the rainforests of eastern Madagascar, where it is considered a highly endangered species. Ferguson-Lees *et al.* (in press) give a total of 11 museum specimens, from 7 specific sites in 4 main areas (of which 5 sites in 3 areas still exist: Langrand 1989). These range from Maroantsetra, at 15°S in the Baie d'Antongil, south to the type locality, Ampasimanava, at 19°24'S, a distance of 440 km. All the specimens were collected between "about 1874" and 1930; apart from 4–5 reports by a forestry official of a bird answering the species' description in the Marojejy Reserve north-west of Andapa (north of Maroantsetra) during 1964–77 (see Collar & Stuart 1985), there had been no conclusive evidence of the species' survival for over 50 years and, on CITES criteria, it could have been considered extinct.

With the realization that more rainforest survives in Madagascar than was believed 10 years ago (N. J. Collar), interest in rediscovering this species has been intense. However, its rediscovery has been complicated by the very few, and brief, published descriptions of the species, and its similarity to Henst's Goshawk *Accipiter henstii*. On this latter point, Collar & Stuart (1985) noted one specimen that had originally been labelled *A. henstii*, and one of the 2 recently discovered specimens in